



SINTB

Sinter bushes, oil soaked

Stepping forward together with our customers

For more than 50 years, **SANKYO OILLESS** has been one of the leading manufacturers of maintenance-free sliding elements. As a leading supplier and pioneer in the production of stamping and press tool components for the automotive industry, **SANKYO OILLESS** supplies an products for many other applications such as mold making, engineering, packaging, heavy industry, aerospace and many more.

The technologies developed by **SANKYO OILLESS** have reduced or eliminated friction, wear and tear. In addition, **SANKYO OILLESS** provides services and quality products to offer you the best possible solutions for your requirements at all times.

The benefits of slide bearings versus roller bearings

In a variety of applications, designers are increasingly replacing roller bearings with slide bearings. In addition to ease of installation and cost effectiveness, slide bearings offer a number of distinct advantages. Slide bearings require less installation space, have a larger load bearing capacity, are maintenance-free or require little maintenance, are easier to assemble and are less susceptible to noise and vibration.

The following list gives an overview of the general advantages of bearings compared to bearings.

Slide bearing

- Higher load bearing capacity and reduced footprint
- Higher resistance to vibration and increased lifetime
- Easier installation
- Lower installation costs
- Increased shaft tolerances possible
- Compensates misalignment and reduces the edge load

Roller bearing

- sensitive to shock, vibration and edge load
- high costs for bearings, housings, counterfaces and - fixing materials
- large space required
- is prone to noise development

Technologies for top performance

SANKYO products are manufactured in our own plants and distributed worldwide.

We offer high quality maintenance-free sliding elements acc. to international standards and standards for use in

- pressing tools
- injection molds
- general engineering

As an experienced specialist, we have the appropriate know-how in tribology to always offer the best solutions for your needs. We supply a large portfolio of lubrication-free sliding elements and also offer custom products acc. to customer drawing.

Quality and performance are our constant commitment!

Oil losses - additional lubrication

During installation and storage, ensure that the bushings do not come into contact with absorbent materials, otherwise oil losses will occur quickly. The ideal solution is to store it in its original packaging. In case of oil loss, re-soak by dipping in hot oil (80 °C) and let it cool down in it. Additional lubrication is normally not necessary. However, it can be advantageous under extreme operating conditions.

Shaft

Hardened and unhardened shaft materials with grinded surfaces can be used. In subordinate applications, drawn shafts can also be used.

We recommend roller burnishing or hard chrome plating of the surface when using stainless steel shafts to prevent the abrasive effect of these materials.

Shaft tolerance **h6 - h9** with bushing tolerance E7

Finishing

Sintered materials can be machined with **carbide (K20/K01)** or **diamond tools**. **Cutting speed 100 - 150 m/min.**

Do not rub or grind sliding surfaces of oil-impregnated bearings, as this will close the oil-promoting pores.

Special dimensions and tolerances

Thanks to our large tool stock, our manufacturing plant can also produce many special sizes in standard (E7 / r7) or special tolerances. Length tolerance of thin-walled bearings $t < 2:h14$.

Impregnation oils

Standard impregnation according to ISO VG 68

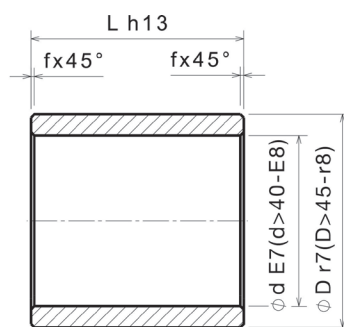
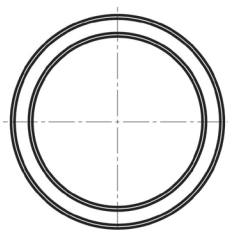
Min. working temperature:	-12 °C
Max. working temperature:	+90 °C
Viscosity:	°E/50°C 3 – 5
Kinematic Viscosity:	cSt 20 – 35

For extreme loads, temperatures or speeds, other lubricants can be selected.

SINTB - Sinter bushes, oil soaked



Article informationen

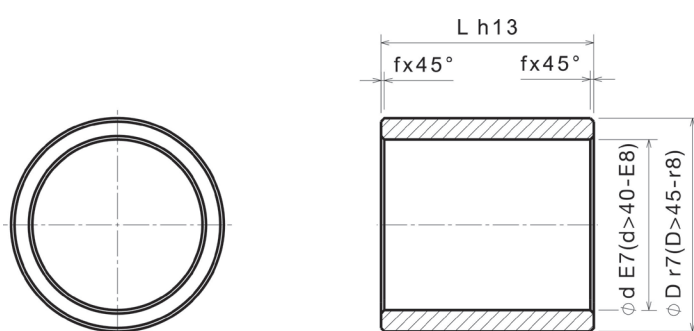


Properties:

Base material	Sinterbronze
Self-lubricating	Yes
Lubricant	Oil
Max. surface pressure P	50 N/mm ²
Max. sliding speed v	300 m/min
Max. P*v-Wert	96 N/mm ² x m/min
Operating temperature	-200°C / +200°C
Friction coefficient	0,09

Article no.:	Article name:	Inner Ø d:	Outer Ø D:	Length L:	f:
994020404	SINTB 2-4-4	2	4	4	0,3
994030604	SINTB 3-6-4	3	6	6	
994030606	SINTB 3-6-6			10	
994030610	SINTB 3-6-10			4	
994030804	SINTB 3-8-4	4	8	6	
994040606	SINTB 4-6-6			4	
994040704	SINTB 4-7-4			8	
994040708	SINTB 4-7-8	4	7	12	
994040712	SINTB 4-7-12			4	
994040804	SINTB 4-8-4			6	
994040806	SINTB 4-8-6	5	8	8	
994040808	SINTB 4-8-8			10	
994040812	SINTB 4-8-12			16	
994041008	SINTB 4-10-8	5	10	6	
994050808	SINTB 5-8-8			8	
994050810	SINTB 5-8-10			10	
994050816	SINTB 5-8-16	5	10	16	
994051006	SINTB 5-10-6			8	
994051008	SINTB 5-10-8			10	
994051010	SINTB 5-10-10	6	12	12	
994051210	SINTB 5-12-10			4	
994060904	SINTB 6-9-4	6	9	6	
994060906	SINTB 6-9-6			10	
994060910	SINTB 6-9-10			16	
994060916	SINTB 6-9-16	6	10	4	
994061004	SINTB 6-10-4			6	
994061006	SINTB 6-10-6			10	
994061010	SINTB 6-10-10	6	12	16	
994061016	SINTB 6-10-16			6	
994061206	SINTB 6-12-6			8	
994061208	SINTB 6-12-8	8	11	12	
994061212	SINTB 6-12-12			16	
994061216	SINTB 6-12-16			12	
994061412	SINTB 6-14-12	8	11	16	
994081106	SINTB 8-11-6			6	
994081108	SINTB 8-11-8			8	
994081112	SINTB 8-11-12	8	11	12	
994081116	SINTB 8-11-16			16	

Article no.:	Article name:	Inner Ø d:	Outer Ø D:	Length L:	f:
994081206	SINTB 8-12-6	8	12	6	0,3
994081208	SINTB 8-12-8			8	
994081212	SINTB 8-12-12			12	
994081216	SINTB 8-12-16			16	
994081408	SINTB 8-14-8		14	8	
994081412	SINTB 8-14-12			12	
994081416	SINTB 8-14-16			16	
994081420	SINTB 8-14-20			20	
994081816	SINTB 8-18-16		18	16	
994101310	SINTB 10-13-10	10	13	10	0,5
994101316	SINTB 10-13-16			16	
994101408	SINTB 10-14-8		14	8	
994101410	SINTB 10-14-10			10	
994101412	SINTB 10-14-12			12	
994101416	SINTB 10-14-16			16	
994101510	SINTB 10-15-10		15	10	
994101516	SINTB 10-15-16			16	
994101520	SINTB 10-15-20			20	
994101608	SINTB 10-16-8		16	8	
994101610	SINTB 10-16-10			10	
994101616	SINTB 10-16-16			16	
994101620	SINTB 10-16-20			20	
994102220	SINTB 10-22-20		22		
994121512	SINTB 12-15-12	12	15	12	
994121516	SINTB 12-15-16			16	
994121520	SINTB 12-15-20			20	
994121608	SINTB 12-16-8		16	8	
994121612	SINTB 12-16-12			12	
994121620	SINTB 12-16-20			20	
994121808	SINTB 12-18-8		18	8	
994121812	SINTB 12-18-12			12	
994121816	SINTB 12-18-16			16	
994121820	SINTB 12-18-20			20	
994121825	SINTB 12-18-25			25	
994122525	SINTB 12-25-25		25	25	
994141810	SINTB 14-18-10	14	18	10	
994141814	SINTB 14-18-14			14	
994141820	SINTB 14-18-20			20	
994142010	SINTB 14-20-10		20	10	
994142012	SINTB 14-20-12			12	
994142014	SINTB 14-20-14			14	
994142020	SINTB 14-20-20			20	
994142030	SINTB 14-20-30			30	
994142830	SINTB 14-28-30		28		
994151910	SINTB 15-19-10	15	19	10	
994151915	SINTB 15-19-15			15	
994151925	SINTB 15-19-25			25	
994152010	SINTB 15-20-10		20	10	
994152015	SINTB 15-20-15			15	
994152020	SINTB 15-20-20			20	



Properties:

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Lubricant	Oil
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Max. P*v-Wert	96 N/mm ² x m/min
Operating temperature	-200°C / +200°C
Friction coefficient	0,09

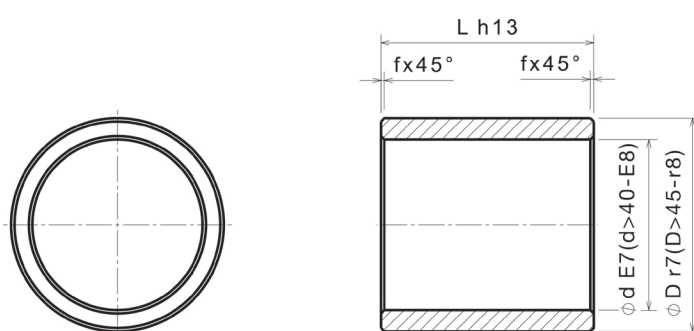
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994152025	SINTB 15-20-25	15	20	25	0,5
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994152110	SINTB 15-21-10		21	10	
994152115	SINTB 15-21-15			15	
994152125	SINTB 15-21-25			25	
994152216	SINTB 15-22-16		22	16	
994152220	SINTB 15-22-20			20	
994152230	SINTB 15-22-30			30	
994153030	SINTB 15-30-30		30	30	
994162012	SINTB 16-20-12	16	20	12	
994162015	SINTB 16-20-15			15	
994162016	SINTB 16-20-16			16	
994162020	SINTB 16-20-20			20	
994162025	SINTB 16-20-25			25	
994162212	SINTB 16-22-12		22	12	
994162216	SINTB 16-22-16			16	
994162220	SINTB 16-22-20			20	
994162225	SINTB 16-22-25			25	
994162230	SINTB 16-22-30		32	30	
994163230	SINTB 16-32-30			30	
994182212	SINTB 18-22-12	18	22	12	0,8
994182218	SINTB 18-22-18			18	
994182230	SINTB 18-22-30			30	
994182412	SINTB 18-24-12		24	12	
994182418	SINTB 18-24-18			18	
994182430	SINTB 18-24-30			30	
994182516	SINTB 18-25-16		25	16	
994182520	SINTB 18-25-20			20	
994182530	SINTB 18-25-30			30	
994183530	SINTB 18-35-30		35	30	
994202515	SINTB 20-25-15	20	25	15	
994202520	SINTB 20-25-20			20	
994202525	SINTB 20-25-25			25	
994202615	SINTB 20-26-15		26	15	
994202620	SINTB 20-26-20			20	
994202625	SINTB 20-26-25			25	
994202630	SINTB 20-26-30			30	
994202820	SINTB 20-28-20		28	20	

Article no.:	Article name:	Inner Ø d:	Outer Ø D:	Length L:	f:
994202830	SINTB 20-28-30	20	28	30	0,8
994202840	SINTB 20-28-40			40	
994204040	SINTB 20-40-40		40		
994222715	SINTB 22-27-15	22	27	15	
994222720	SINTB 22-27-20			20	
994222725	SINTB 22-27-25			25	
994223220	SINTB 22-32-20		32	20	
994223230	SINTB 22-32-30			30	
994253020	SINTB 25-30-20	25	30	20	
994253025	SINTB 25-30-25			25	
994253030	SINTB 25-30-30			30	
994253220	SINTB 25-32-20		32	20	
994253225	SINTB 25-32-25			25	
994253230	SINTB 25-32-30			30	
994253235	SINTB 25-32-35			35	
994253525	SINTB 25-35-25		35	25	
994253535	SINTB 25-35-35			35	
994253550	SINTB 25-35-50			50	
994254535	SINTB 25-45-35		45	35	
994303520	SINTB 30-35-20	30	35	20	
994303525	SINTB 30-35-25			25	
994303530	SINTB 30-35-30			30	
994303820	SINTB 30-38-20		38	20	
994303825	SINTB 30-38-25			25	
994303830	SINTB 30-38-30			30	
994303840	SINTB 30-38-40			40	
994304015	SINTB 30-40-15		40	15	
994304030	SINTB 30-40-30			30	
994304045	SINTB 30-40-45			45	
994304060	SINTB 30-40-60			60	
994305060	SINTB 30-50-60		50	60	
994354125	SINTB 35-41-25	35	41	25	
994354135	SINTB 35-41-35			35	
994354140	SINTB 35-41-40			40	
994354525	SINTB 35-45-25		45	25	
994354535	SINTB 35-45-35			35	
994354540	SINTB 35-45-40			40	
994354550	SINTB 35-45-50			50	
994354570	SINTB 35-45-70			70	
994404630	SINTB 40-46-30	40	46	30	
994404640	SINTB 40-46-40			40	
994404650	SINTB 40-46-50			50	
994405030	SINTB 40-50-30		50	30	
994405040	SINTB 40-50-40			40	
994405050	SINTB 40-50-50			50	
994405060	SINTB 40-50-60			60	
994405080	SINTB 40-50-80			80	
994455135	SINTB 45-51-35	45	51	35	
994455145	SINTB 45-51-45			45	
994455155	SINTB 45-51-55			55	

SINTB - Sinter bushes, oil soaked



Article informationen



Properties:

Base material	Sinterbronze
Self-lubricating	Yes
Lubricant	Oil
Max. surface pressure P	50 N/mm ²
Max. sliding speed v	300 m/min
Max. P*v-Wert	96 N/mm ² x m/min
Operating temperature	-200°C / +200°C
Friction coefficient	0,09

Article no.:	Article name:	Inner Ø d:	Outer Ø D:	Length L:	f:
994455535	SINTB 45-55-35	45	55	35	0,8
994455545	SINTB 45-55-45			45	
994455555	SINTB 45-55-55			55	
994455560	SINTB 45-55-60			60	
994455565	SINTB 45-55-65			65	
994456580	SINTB 45-65-80		65	80	
994506035	SINTB 50-60-35	50	60	35	
994506050	SINTB 50-60-50			50	
994506070	SINTB 50-60-70			70	
994506100	SINTB 50-60-100			100	
994507070	SINTB 50-70-70		70	70	
994556540	SINTB 55-65-40	55	65	40	
994556555	SINTB 55-65-55			55	
994556570	SINTB 55-65-70			70	
994557070	SINTB 55-70-70		70	70	
994606850	SINTB 60-68-50	60	68	50	1
994606860	SINTB 60-68-60			60	
994606870	SINTB 60-68-70			70	
994607050	SINTB 60-70-50		70	50	
994607060	SINTB 60-70-60			60	
994607250	SINTB 60-72-50		72	50	
994607260	SINTB 60-72-60			60	
994607270	SINTB 60-72-70			70	
994607560	SINTB 60-75-60		75	60	
994607590	SINTB 60-75-90			90	
994608590	SINTB 60-85-90		85		
994657560	SINTB 65-75-60		65	75	
994657590	SINTB 65-75-90	90			
994658060	SINTB 65-80-60	80		60	
994658090	SINTB 65-80-90		90		
994708060	SINTB 70-80-60		60		
994708090	SINTB 70-80-90	70	90		
994708560	SINTB 70-85-60		60		
994708590	SINTB 70-85-90		90		
994758570	SINTB 75-85-70	75	85	70	
994758600	SINTB 75-85-100			100	
994759070	SINTB 75-90-70			70	
994759100	SINTB 75-90-100		90	100	2

Article no.:	Article name:	Inner Ø d:	Outer Ø D:	Length L:	f:
994761010	SINTB 75-100-100	75	100	100	2
994809070	SINTB 80-90-70	80	90	70	
994809100	SINTB 80-90-100			100	
994809570	SINTB 80-95-70		95	70	
994809600	SINTB 80-95-100			100	
994810510	SINTB 80-105-100		105		
994859510	SINTB 85-95-100	85	95		
994860100	SINTB 85-100-100		100		
994910580	SINTB 90-105-80	90	105	80	
994911080	SINTB 90-110-80		110		
994991280	SINTB 100-120-80	100	120		

SINTB - Sinter bushes, oil soaked

General and technical information



Material data

Material		SO#50SP2*	SO#50SP5	SO#50SP7	SO#50SP8	SO#50SP13	SO#50B
		<i>Hard brass with graphite</i>	<i>Alu-bronze with graphite</i>	<i>Alu-bronze with graphite</i>	<i>Hard brass with graphite</i>	<i>Bronze with graphite</i>	<i>Red brass with graphite</i>
Self-lubricating		Yes	Yes	Yes	Yes	Yes	Yes
Lubricant		Graphite	Graphite	Graphite	Graphite	Graphite	Graphite
Max. surface pressure [N/mm ²]		100	100	120	130	120	50
Max. sliding speed [m/min]		30	10	10	15	10	50
Max. P*v-Wert [N/mm ² * m/min]		200	150	200	200	200	100
Temperature [°C]	Standard Max	-50 / +200 +300	-50 / +200 +300	-50 / +200 +300	-50 / +200 +300	-50 / +200 +300	-50 / +200 +400
Friction coefficient**	initial long term	0,15 0,07	0,15 0,07	0,15 0,07	0,15 0,07	0,2 0,15	0,15 0,07
Brinell hardness [HB]		>210	>210	>260	220 ~ 260	>280	>60
Further information							
Elongation [%]		>12	>18	>2	>3	>0,5	>15
Density [kg/dm ³]		7,9	7,7	7,8	7,8	7,2	8,7
Tensile strength [N/mm ²]		>755	>686	>833	>700	>550	>195
Yield strength [N/mm ²]		>412	>372	>509	-	-	>105
E-Module [N/mm ²]		97000	108000	123600	108000	145000	96000
Thermal expansion [10 ⁻⁵ * grd.-1]		1,9	1,6	1,6	1,9	1,71	1,8

*: Material used according to SANKYO OILLESS standards

**: against steel, hardened and grinded

Tin bronze	Sinter-bronze	SO#50PB	CuSn8	SO#50S45C	SO#50F	Polyacetal
		<i>Tin bronze</i>	<i>acc. to DIN 17662</i>	<i>Steel with graphite</i>	<i>Grey cast iron with graphite</i>	<i>Plastic</i>
No	Yes	No	No	Yes	Yes	No
-	Oil	-	-	Graphite	Graphite	Graphite
80	50	80	40	30	5	25 35 (with oil)
20	300	50	120	10	10	50 200 (with oil)
-	96	100	-	80	50	100 200 (with oil)
-50 / +200 +300	-12 / +90	-50 / +200 +300	-200 / +200	-50 / +150	-50 / +150	-50 / +80
0,16	0,09	0,15 0,07	-	0,01	-	-
>80	>25	>80	-	>375	160 ~ 220	115 (HRR)
n						
>6	-	>5	-	19	-	73
8,7	6,5 ~ 7,0	8,2	8,8	7,8	7,1 ~ 7,3	1,4
>295	-	>295	-	>690	>250	69
>161	-	>161	-	-	-	-
108000	-	108000	115000	-	-	-
1,8	-	1,8	-	1,1	1	7,7

